

REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application. Claims 23-44 are now pending in this application. Claims 23, 28, 31 and 38 and are independent. Claims 23, 28, 31-36 and 38-43 have been amended.

Reconsideration of this application, as amended, is respectfully requested.

Drawings

Pursuant to the Examiner's requirement, Applicants submit herewith corrected formal drawings. The corrected formal drawings are attached to a separate Letter to the Official Draftsperson. The corrected formal drawings include the proposed changes filed May 16, 2001.

Rejection Under 35 U.S.C. §102(e) and §103(a) - Hirayama et al.

Claims 23-44 stand rejected under 35 U.S.C. §102(e) as being anticipated by Hirayama et al. Claims 23-44 stand rejected under 35 U.S.C. §103(a) as being unpatentable over applicant's admitted prior art in view of Hirayama et al. These rejections are respectfully traversed.

Hirayama et al. qualifies as prior art under 35 U.S.C. §102(e), as having an earliest possible filing date of October 29, 1993. The present application claims priority on Korean application No. 18841/1993 filed September 17, 1993.

In order to perfect Applicants' claim to foreign priority, Applicants submit herewith a verified English translation of Korean application 18841/1993. A certified copy of Applicants' foreign priority application was previously filed on September 16, 1994, in parent application Serial No. 08/735,572.

Since Applicants are entitled to a filing date earlier than the 102(e) date of Hirayama et al., it is respectfully submitted that these rejections have been rendered moot. Accordingly, reconsideration and withdrawal of these rejections are respectfully requested.

Rejection Under 35 U.S.C. §102(e) and §103(a) - Fujinami

Claims 23-44 stand rejected under 35 U.S.C. §102(e) as being anticipated by Fujinami. Claims 23-44 stand rejected under 35 U.S.C. §103(a) as being unpatentable over applicant's admitted prior art in view of Fujinami. These rejections are respectfully traversed.

Fujinami does show a device for processing audio signals reproduced from an optical disk. However, Fujinami fails to show or suggest such a device

or method having the specific structural features or method steps, as set forth in the combinations of Applicants' independent claims 23, 28, 31 and 38.

In Fujinami, "plural channels correspond to plural packets. Each of the plural packets is constituted of a packet header portion and an audio data portion." (col. 9, lines 10-12). The "packet header" identifies the audio data which follows. For example in Fujinami's Fig. 10, identifier 0 would identify the left channel, identifier 1 would identify the right channel, identifier 2 would identify the guide channel, etc. In Fujinami's Fig. 11, the identifier 0 identifies the left channel of the background sound, the identifier 1 identifies the right channel of the background sound, the identifier 2 identifies the audio channel for the center speaker, etc.

Applicants' independent claims recite various combinations which include coding information identifying both a coding mode and an identification of the unit of digital audio data. In Fujinami, the coding information only identifies the identification of the digital audio data (e.g., center channel, right channel stereo, left channel stereo, etc.). In Fujinami, the coding information does not identify a coding mode for the digital audio data. Rather, in Fujinami, the coding mode is preset and must remain constant.

The present invention is quite distinctive from Fujinami in that the coding information for the units of digital audio data includes an identification of the coding mode. Since Fujinami's digital audio data is in a preset format,

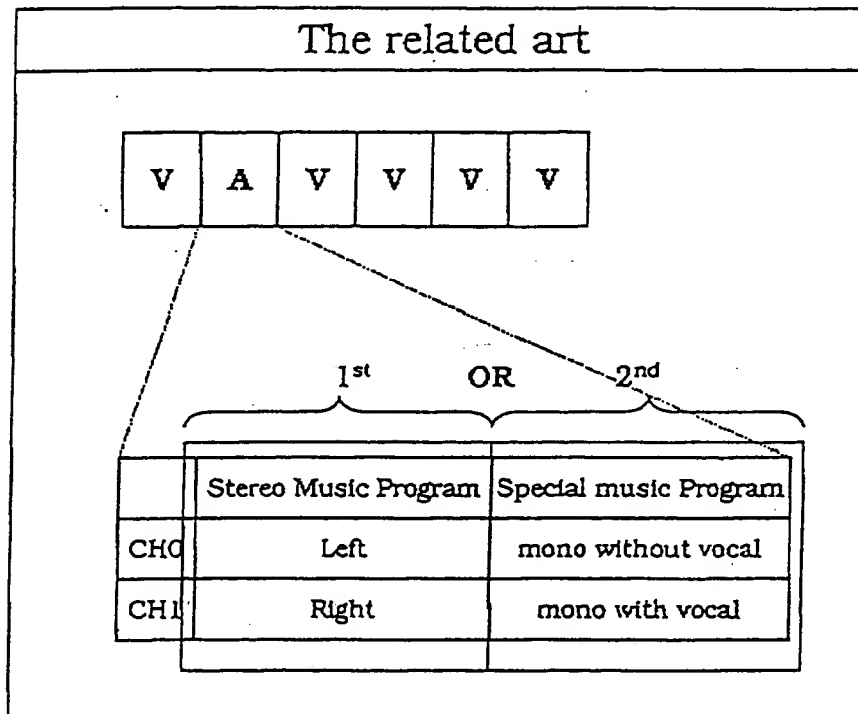
Fujinami does not, and would have no reason to, include a coding mode in the coding information preceding the digital audio data.

A second distinction of the combinations set forth in Applicants' independent claims resides in the actual digital audio data following the coding information. In the present invention, the digital audio data includes more than one audio channel. In Fujinami, the audio data includes only one audio channel. For example, the audio channel might be the center speaker, back sound, left stereo sound, right stereo sound, etc. In the present invention, the digital audio data which follows the coding information will include more than one audio channel.

The application, as originally filed, was directed to, and focused on, reproducing a stereo sound accompaniment for a Karaoke CD having a vocal track also recorded thereon. The present invention overcame shortcomings in the prior art, which only allowed for mono music accompaniment.

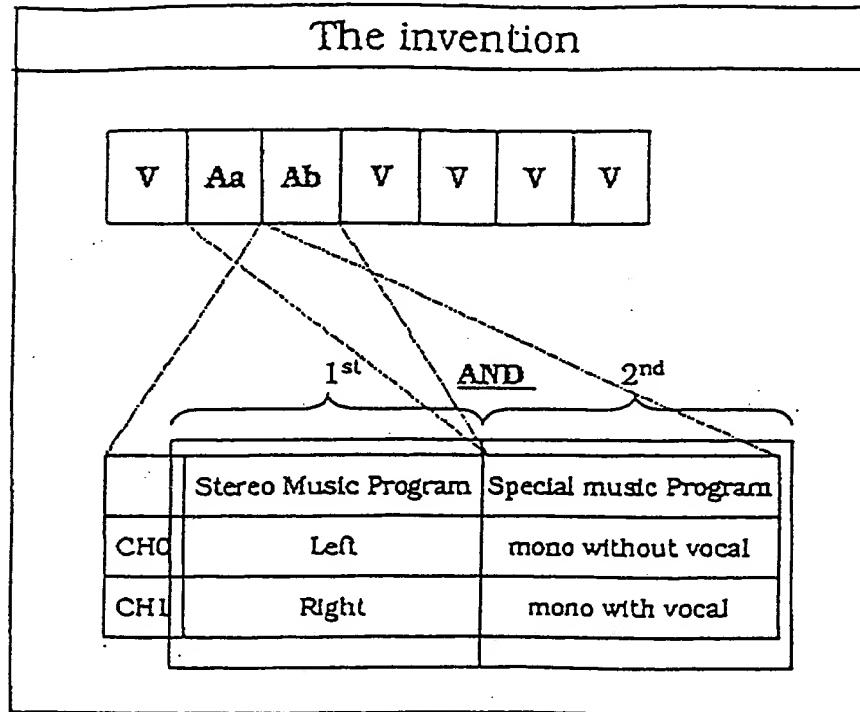
The background of the invention (pages 1-4 of the specification) set forth the state of the art, which included a particular format for interleaving of MPEG audio and video data (as illustrated in Applicant's Figure 3). A disc having such encoding could either (1) reproduce a stereo music program (with no vocal accompaniment), or (2) reproduce a special music program, which included a vocal accompaniment, however the music in the special music program was mono, not stereo. Table 1 on page 3 of the specification

illustrated the situation. Below is an illustration of the background art, which combines Figure 3 and Table 1 to illustrate the situation:



The present invention provides a karaoke CD system capable of reproducing a stereo sound accompaniment for a Karaoke CD having a vocal track also recorded thereon. The disclosure on pages 6-11 describes digital audio data which can be of a first type or a second type. Either type includes two audio channels. The present invention utilizes a new format for interleaving of MPEG audio and video data (as illustrated in Applicant's Figure

5). Below is an illustration, similar to the above illustration, which illustrates the present invention in combination with Figure 5:



In sum, the background art only interleaved "A" into the MPEG data. "A" represents two audio channels (Table 1). Therefore, by the background art, one could either have stereo music (L & R), or mono music without vocals (L) and mono music with vocals (R).

The present invention interleaves both "Aa" and "Ab" into the MPEG data. "Aa" represents two audio channels and "Ab" represents two audio channels. Therefore, the present invention gives the user the ability to enjoy stereo music

(via "Aa") and music with or without vocals (via "Ab"). See page 12, lines 1-5 which state: "As has been explained, this invention for a karaoke CD system increases the enjoyment of karaoke by reproducing audio data containing a player's voice, i.e., playing sound and accompaniment sound, and audio data containing accompaniment sound selectively, which permits stereophony sound corresponding to the CD sound." (underlining added).

Because the combinations as set forth in Applicants' claims are not shown, nor fairly suggested by the prior art of record, reconsideration and withdrawal of these rejections are respectfully requested.

Conclusion

In the event that any outstanding matters remain in this application, Applicants request that the Examiner contact Scott L. Lowe (Reg. No. 41,458) at (703) 205-8000 to discuss such matters.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant respectfully petitions for a one (1) month extension of time for filing a response in connection with the present application and the required fee of \$110 is attached hereto.

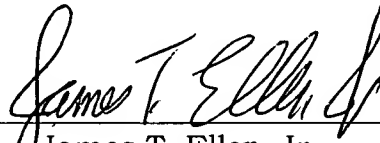
If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit

Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Very truly yours,

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Attachments: Version with Markings to Show Changes Made
 Letter to the Official Draftsperson w/ formal Figs. 1-8
 Verified English Translation of Korean Appln. 18841/1993

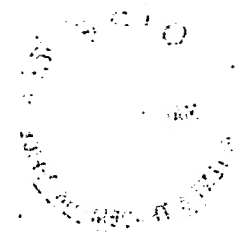


FIG.1

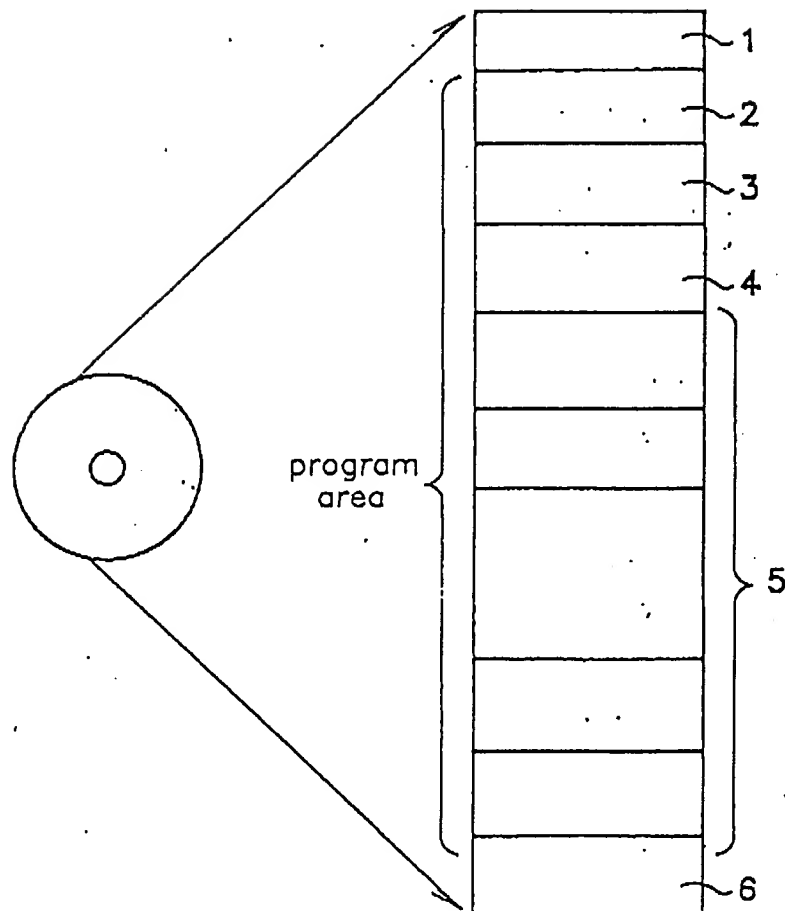


FIG. 2

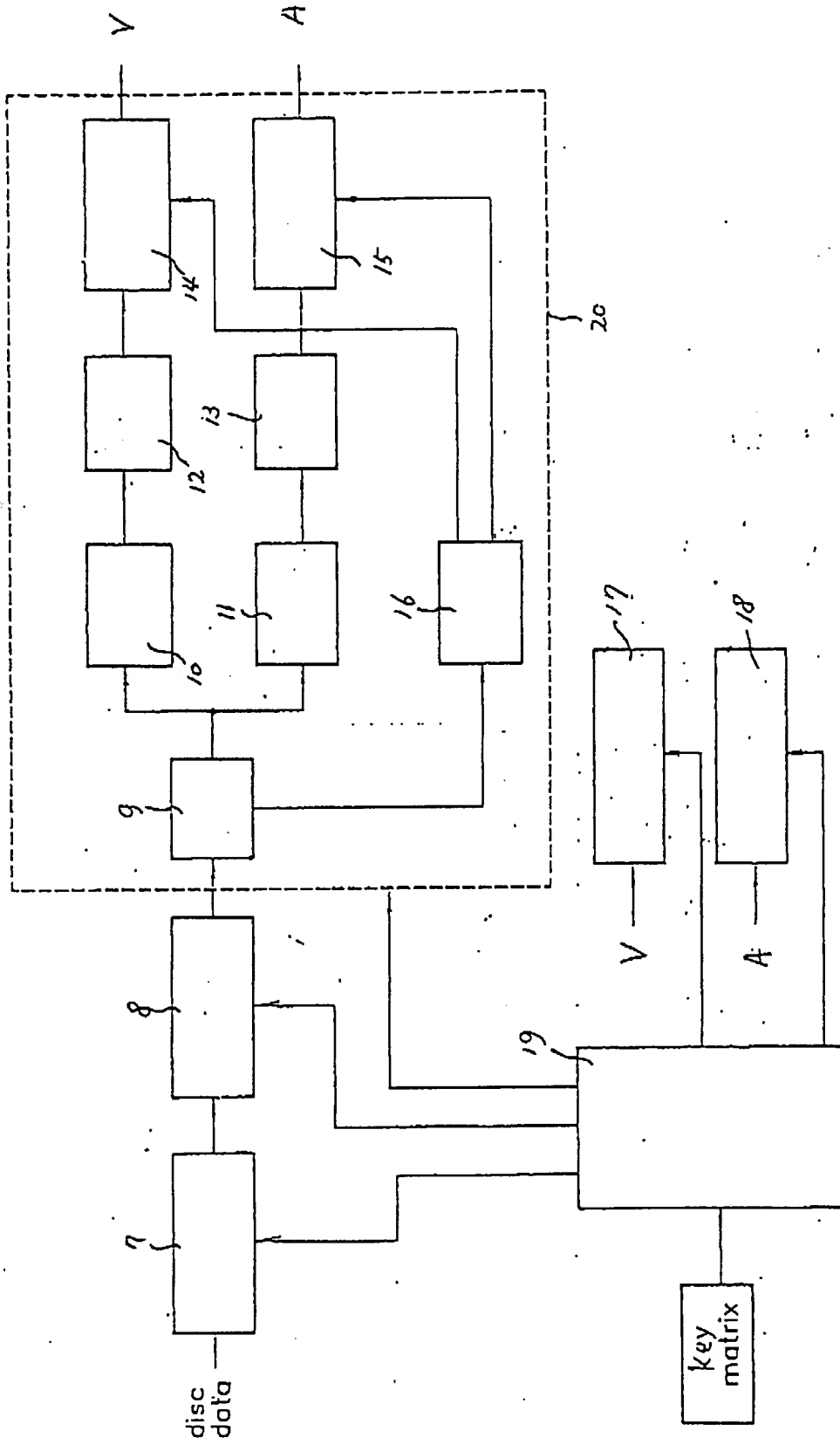


FIG.3

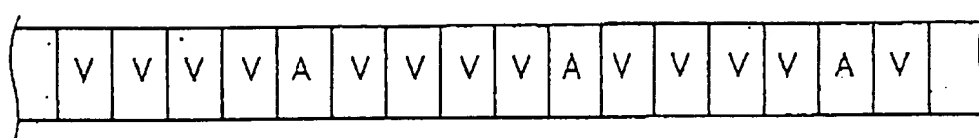


FIG.4

	MPEG video	MPEG audio
file number	sequence number	sequence number
channel number	\$ 01	\$ 01
submode	% *11*001*	% *11*010*
coding number	\$ 0F	\$ 7F

FIG.5

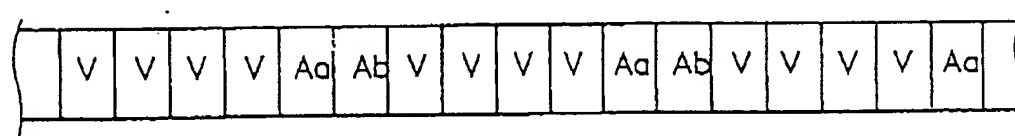


FIG.7

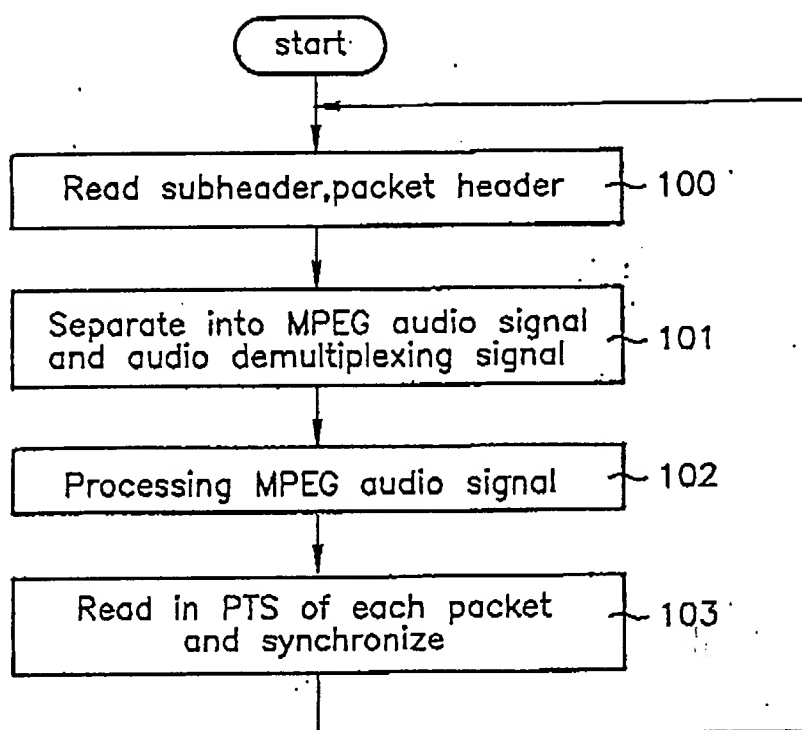
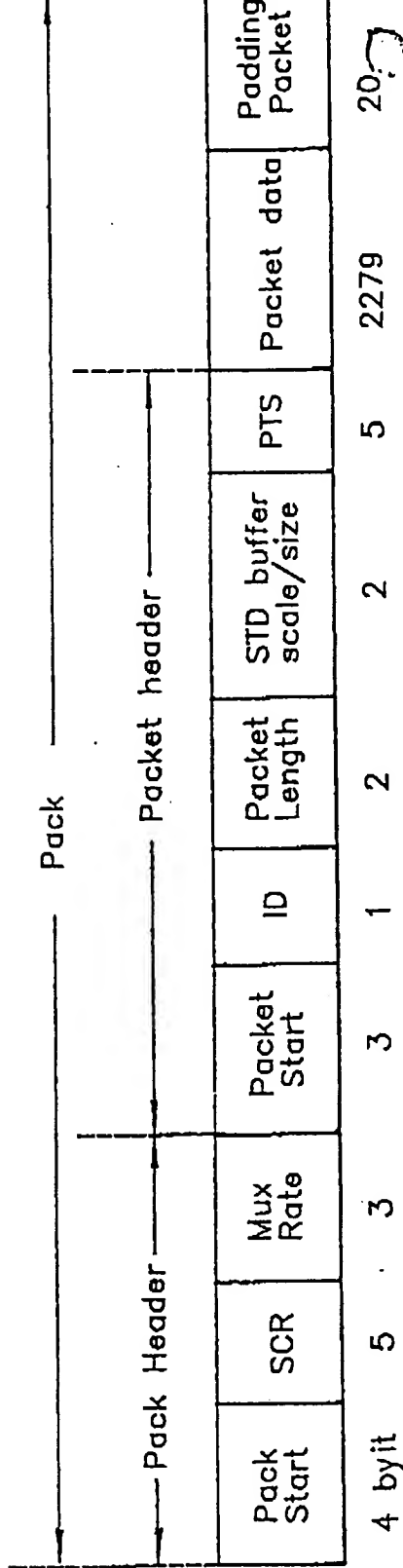


FIG. 8



VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

The claims have been amended as follows:

23. (Twice Amended) A device for reproducing a digital signal recorded on a medium, the digital signal including a video signal, a plurality of audio signals encoded into audio channels wherein each audio signal is composed of data units and each data unit including information for both indicating a coding mode and identifying the audio signal represented by the data unit, and at least more than one audio channel, a block of the data units being sequentially interleaved between data units of video signal, each audio signal being represented by one of the data units in the block, comprising:

a demodulator for demodulating the digital signal to restore an original signal;

a signal processor for receiving the plurality of audio signals, extracting the indicating information, separating the data units corresponding to at least one of the plurality of audio signals based on the extracted indicating information; and

a controller, coupled to the signal processor, controlling the signal processor to separate the data units corresponding to one of the audio signals designated by user input.

28. (Twice Amended) A method for reproducing a digital signal recorded on a medium, said digital signal including a video signal, a plurality of audio signals encoded into audio channels wherein each audio signal is composed of at least data units of audio information, and each data unit including indicating information for indicating a coding mode and identifying the audio signal represented by the data unit, and at least more than one audio channel, a block of the data units being sequentially interleaved between data units of video signal, each audio signal being represented by one of the data units in the block, comprising the steps of:

demodulating the digital signal to restore an original signal;

receiving the video signal and the plurality of audio signals;

extracting the indicating information;

separating the data units corresponding to at least one of the plurality of audio signals based on the extracted indicating information; and

controlling the separating step to separate data units corresponding to one of the plurality of audio signals in response to user input designating one of the plurality of audio signals.

31. (Twice Amended) A device for processing a digital signal, comprising:
an audio signal processor receiving indicating information and first units

of a plurality of digital audio data interleaved at a predetermined interval with second units of digital video data, each unit of the digital audio data including more than one audio channel, and the indicating information indicating both a coding mode and a presence of the audio channels in the digital audio data, the audio signal processor extracting the indicating information, and separating one of the audio data [channels] using the indicating information; and

a control circuit controlling the audio signal processor to separate one of the audio data [channels] based on user input designating one of the audio data [channels].

32. (Amended) The device of claim 31, wherein the digital audio data includes [an] audio data [channel] of a first type and [an] audio data [channel] of a second type, contents of the audio data [channel] of the first type being different from contents of the audio data [channel] of the second type.

33. (Amended) The device of claim 32, wherein the audio data [channel] of the first type includes accompaniment sound.

34. (Amended) The device of claim 32, wherein the audio data [channel] of the first type includes accompaniment sound and vocals, which are associated with the digital video data.

35. (Twice Amended) The device of claim 31, further comprising:
a timing signal generator generating a timing signal; and wherein
the audio signal processor compares the timing signal to timing
information in the digital audio data, and outputs the separated one of the
audio data [channels] based on the comparison.

36. (Amended) The device of claim 31, wherein the audio signal processor
MPEG decodes the audio data [channels].

38. (Twice Amended) A method for processing a digital signal,
comprising:
receiving indicating information and first units of a plurality of digital
audio data interleaved at a predetermined interval with second units of digital
video data, each unit of the digital audio data including more than one audio
channel, and the indicating information indicating both a coding mode and a
presence of the audio channels in the digital audio data;
extracting the indicating information;
separating one of the audio data [channels] using the indicating
information and user input designating one of the audio data [channels].

39. (Amended) The method of claim 38, wherein the digital audio data includes [an] audio data [channel] of a first type and [an] audio data [channel] of a second type, contents of the audio data [channel] of the first type being different from contents of the audio data [channel] of the second type.

40. (Amended) The method of claim 39, wherein the audio data [channel] of the first type includes accompaniment sound.

41. (Amended) The method of claim 39, wherein the audio data [channel] of the first type includes accompaniment sound and vocals, which are associated with the digital video data.

42. (Twice Amended) The method of claim 38, further comprising:
generating a timing signal;
comparing the timing signal to timing information in the digital audio data; and
outputting the separated one of the audio data [channels] based on the comparison.

43. (Twice Amended) The device of claim 38, wherein the separating step includes MPEG decoding the audio data [channels].